Proposed Specific Regulatory Level Chemical Causing Cancer: Glyphosate

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Public Comment to OEHHA on 6-7-17

There Is No 'Safe' Level of Glyphosate - Please Protect Californians and Our Natural Resources from Glyphosate

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Members of OEHHA, you have before you a critically-important decision to make. Do you permit the use of glyphosate, which is now pervasive in the soil in which our food is grown, the water which we drink, the meats and foods which we eat, and the air that we breathe…do you permit this toxic chemical's use at the random rate of 1100 mcg per day per person…with no accurate way to monitor or enforce such a rate…and with no accounting for a person's age, weight, health status, types of exposures, or present load of toxins? Or…do you permit the use of glyphosate at a lower, but still random rate, which also cannot be accurately monitored or enforced…and again, without personal factors taken into account? Or, do you act on the growing body of evidence that shows that there is **no safe level of glyphosate**, and declare that its use will no longer be permitted in the state of CA?

At this point in time, we know that glyphosate is both tumorigenic and carcinogenic, meaning that it causes both tumors and cancer. We know that it causes cancer cells to proliferate, whether it was the original cause of those cells or not. We know that glyphosate is a neurotoxin, meaning that it damages the brain. We know that is an endocrine system disruptor, meaning that it adversely affects hormones causing developmental, reproductive, neurological, and immunological problems.

We know that glyphosate can substitute for glycine during protein synthesis. I have attached a list from Dr. Stephanie Seneff of MIT which explains the many negative health consequences that result when glyphosate substitutes for glycine during protein synthesis. She considers one of the most serious consequences to be the disruption of digestive enzymes, which can result in autoimmune disease.

To break things down to a very practical level, here are a few questions to consider:

1. If I asked you which apple you wanted to eat, or feed to your child or grandchild, would you choose the one sprayed with poison, i.e. with glyphosate, or the one not

sprayed with poison, the clean and untainted one?

2. If I asked you which glass of water you wanted to drink, or give to your child or grandchild, would you choose the one in which glyphosate run-off was present, or the one without a known carcinogen and known neurotoxin included?

3. If I asked you which plate of food you wanted to eat, or give to your daughter or granddaughter who was breastfeeding her newborn, would you choose the plate of food on which the meat, potatoes, vegetables, and roll were all heavily laced with the skull-and-crossbones-labeled glyphosate, whose Monsanto testers wear Hazmat suits when field testing it, or would you choose the plate of food cleanly raised which was grown with no known health hazards?

4. Final question, how will you answer your spouse, children, and grandchildren who receive a cancer diagnosis, who struggle with infertility, who suffer from thyroid problems, who are brain damaged in some way, or who succumb to any of the myriad health and development issues now plaguing our population in never-seen-before numbers, when they ask you if **you** ever permitted anything known to be carcinogenic, neurotoxic, or hormone and endocrine disrupting during your tenure at OEHHA?

Each of you knows what the right thing to do is. The question is, will you choose to do it?

The following is from Dr. Stephanie Seneff of MIT when asked on 6-6-17 to explain the adverse effects when glyphosate substitutes for glycine during protein synthesis:

There are innumerable negative consequences to glyphosate's potential ability to substitute for glycine during protein synthesis. Perhaps one of the most serious is the disruption of digestive enzymes, as numerous digestive enzymes like trypsin and prolyl aminopeptidase depend on multiple critical glycine residues to function properly. An inability to digest proteins leads directly to autoimmune disease through molecular mimicry, particularly because glyphosate also sets up a leaky gut barrier.

The disruption of the shikimate pathway that is the alleged "mechanism of toxicity" of glyphosate is due to glyphosate substituting for a highly conserved glycine residue at the active site of EPSP synthase.

Another likely consequence is a disturbance of the collagen matrix in bones, joints, skin, etc. This leads to joint pain and rheumatoid arthritis. Nearly one fourth of the amino acid residues in collagen are glycine residues.

Another serious problem is the disruption of cytochrome C oxidase, because of an essential glycine residue in the oxyanion hole. This can be predicted to cause the spewing out of superoxide molecules causing oxidative stress, as well as impairment in the synthesis of ATP, the energy currency of the cell.

Myosin, a crucial molecule for muscle contraction, has a highly conserved glycine residue at residue position 699. If it is swapped out for alanine (one extra methyl group) the protein drops to only 1% of its capacity to contract.

There's a protein that is involved in DNA repair that also has a highly conserved glycine residue. Its disruption will lead to a much higher rate of DNA mutations and subsequently cancer.

Many receptors depend on critical glycine residues to work correctly. This includes the LDL receptor - leading to high serum LDL (the "bad" cholesterol) and the GABA receptor whose impairment is linked to autism, among many others.

There's a terminal glycine residue in the small bioactive peptides gastrin, oxytocin and vasopressin. These important signaling molecules would be impaired if this glycine is substituted by glyphosate.

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Multiple proteins depend upon a terminal glycine residue in order to hook onto the cytoskeleton or onto the plasma membrane. They can't work properly in their jobs if they can't attach.

Hormone sensitive lipase contains essential glycine residues. Its impairment would lead to obesity.

There are many other examples.

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